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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,585	10/20/2003	Eric Montfort	Q77958	2460
23373	7590	12/09/2005		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER BROADHEAD, BRIAN J	
			ART UNIT	PAPER NUMBER
			3661	

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/687,585

Applicant(s)

MONTFORT ET AL.

Examiner

Brian J. Broadhead

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 4-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification fails to disclose, "the necessary torque for maintaining the predetermined attitude is based on the precession tendency of at least one of the gyroscopes." If this is an important enough part of the invention to be claimed, there should have been disclosure of this limitation in the originally filed disclosure. There is no disclosure that the invention knows the precession tendency of the gyroscope beforehand or simply uses feedback to account for the precession tendency.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4, 5, 6, 7, 8, 9, 10, 12, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collyer, 5931419, in view of Markley et al., "Attitude Control System Conceptual Design for Geostationary Operational Environmental Satellite Spacecraft Series".

3. Collyer discloses an attitude control system for a geostationary satellite including elongate members such as solar generators and/or antennas, in particular deployable members, which system includes gyroscopic actuators for supplying the torque necessary for maintaining the attitude of said satellite when subjected to disturbing forces or torques on line 7-15, on column 1; wherein said gyroscopic actuators are adapted to maintain a setpoint attitude during orbit correction phases on lines 20-28, on column 1; gyroscopic actuators are adapted to control the attitude during phase of insertion into orbit on lines 14-15, on column 1, and basing the control based on the precession tendency of the gyroscope is inherent. Collyer does not disclose the orbit is geosynchronous. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the invention Collyer with any type of orbit insertion including a geosynchronous

4. Collyer does not disclose the orbit is geosynchronous; an attitude regulation loop including a corrector such that the bandwidth of said loop contains the lowest and most energetic frequencies of the flexible modes of said elongate members; said corrector of said loop is of the proportional, integral, derivative type and is associated with an attenuation filter; and said corrector of said loop is synthesized by means of advanced system control methods. It would have been obvious to one of ordinary skill in the art at

the time the invention was made to use the invention Collyer with any type of orbit insertion including a geosynchronous. Markley et al. teach an attitude regulation loop including a corrector such that the bandwidth of said loop contains the lowest and most energetic frequencies of the flexible modes of said elongate members in figure 7; wherein said corrector of said loop is of the proportional, integral, derivative type and is associated with an attenuation filter in figure 3; and said corrector of said loop is synthesized by means of advanced system control methods on page 252. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the controls method of Markley et al. in the invention of Collyer because such modification would provide pointing performance and stability while avoiding low-frequency flexible modes of the spacecraft while providing superior rotational maneuvering with the CMGs. It is well known in the art that CMGs can be interchanged with reaction wheels to provide faster pointing, but aren't used as often because of their higher cost.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Collyer, 5931419, in view of Markley et al., "Attitude Control System Conceptual Design for Geostationary Operational Environmental Satellite Spacecraft Series", as applied to claims 8 and 10 above, and further in view of Parvez et al., 6089507.

6. Collyer and Markley et al. disclose the limitations as set forth above. They do not disclose using an H-infinity control law. Parvez et al. teach using an H-infinity control law on lines 44-51, on column 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the H-infinity control law of Parvez et

al., in the invention of Collyer and Markley et al. because such modification would enhance control system performance by minimizing the control error and control effort as stated on lines 51-53, on column 2, of Parvez et al.

### ***Response to Arguments***

7. Applicant's arguments filed 7-25-05 have been fully considered but they are not persuasive. The arguments that the bandwidth of Markley et al. is limited to .1 Hz, is not convincing since the overall bandwidth of the control loop spans a much larger range. Applicant is only considering the control loop as it applies to the gyros, but the claim does not limit the control loop to the gyros only. The arguments that Markley et al. does not disclose using an advanced system control method is not convincing since the specification does not define the term and it being interpreted broadly based on the plain meaning of the words. The PID of Markley et al. can be considered an advanced system control method.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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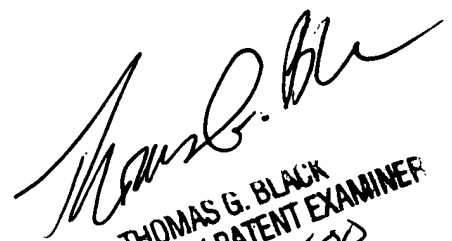
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Broadhead whose telephone number is 571-272-6957. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
BJB

  
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